

Title:     Multipack and blank and method for the manufacture thereof.

The invention relates to a package for containers such as bottles or cans. Such packages, in which rows of such containers are packaged, are usually indicated as multipack.

As a rule, for manufacturing multipack packages, a blank is folded  
5 from cardboard. The blank comprises, for instance, an upper surface, two side panels extending downwards from the upper surface and two bottom flaps, which bottom flaps are folded below, for instance, two rows of two (four-pack) or three (six-pack) bottles. With the aid of lips on a first bottom flap which are pressed into openings in the other bottom flap, the package is closed below the  
10 bottles. In the upper surface, two openings are provided with which the package can be engaged. Such a package is known from US 3 815 320. A comparable package is known from US 5 673 538, wherein, however, each of the bottles reaches by its neck through an opening in the upper surface.

These known packages have as a disadvantage that the bottom flaps  
15 are to be pressed under the bottles, while the lips are to be forced into the openings. As a result, such a package is relatively difficult to form and the feed-through rate is limited. Moreover, this package is open at the front and rear sides. These packages are manufactured from relatively heavy cardboard. For instance 380 gr/m<sup>2</sup> for a six-pack of bottles of beer of 30 centilitres.

20 Comparable packages are known wherein the front and rear side are closed too, at least partly. However, to that end, the packages are to be rotated on the packaging line through an angle of approximately 90° as a result of which the length of the apparatus required thereto is considerably increased and, furthermore, the feed-through rate and, hence, the capacity of the  
25 apparatus is reduced. Moreover, these packages still have the other above-mentioned drawbacks of heavy cardboard and complicated manufacture.

Further, packages are known with which the containers are arranged on a bottom panel while two side panels are provided extending

upwards from the bottom. On the upper side, one of the side panels is connected via a fold line to an upper flap, the other side panel to narrow glue flap. When forming the package, the containers are arranged on the bottom panel, whereupon first the side panels and then the upper flap are folded over  
5 the bottles. The upper flap is then glued onto the glue flap. In the upper flap, again, two openings are provided for engaging the package. With such a package, the front and rear side can be open or closed. With the open version, the package can be set up on a continuous packaging apparatus, with the closed version, the package will have to be rotated through 90° again before  
10 the front and rear sides can be closed.

For these packages too it holds that they are to be manufactured from relatively thick and heavy cardboard, as the packages in filled condition are lifted by the upper surface. When the packages are lifted as described hereinabove, the risk exists that the upper surface tears loose or tears partly.

15 Further, from US 4 216 861, a package is known wherein a blank is folded to form a tube and is glued and, in that condition, is stored and transported. In a packaging machine, the pre-glued, tubular packages are set up whereupon the containers are slid into the tube. Then, with the aid of folding flaps, the front and rear sides of the package are closed. Such a  
20 package has as a drawback that it is formed in two steps, which is expensive and logistically complicated, that the pre-glued tubular packages take up relatively much space and that, moreover, an additional apparatus is to be provided for both pre-gluing and folding-in the packages and for setting up the packages before they can be filled. This is cumbersome. Furthermore, these  
25 packages too are manufactured from relatively heavy and thick cardboard.

The object of the invention is a package for containers as described in the opening paragraph, wherein the drawbacks mentioned of the above-described, known packages are avoided, at least partly.

In particular, the invention contemplates a package for containers  
30 for forming a multipack which is closed at the upper side and, consequently,

has a substantially closed bottom panel, at least formed in one part, and which is not pre-glued but is formed and closed around the containers to be packaged from a substantially planar condition.

5 The invention further contemplates providing such a package which can be formed from relatively thin, light cardboard.

Furthermore, the invention contemplates providing a package of the type described which can be taken up in a simple manner with the aid of at least two openings or such provisions in an upper surface of the package.

10 At least a number of these objects are achieved with a package according to claim 1.

With a package according to the invention, at the upper side of the package, at least at the location of the transition between the side panels and the upper surface, at least a part of this transition is designed in at least two layers. Here, use is made of the surprising insight that precisely at that  
15 location, the greatest strength is required, at least protection against tearing of the fold lines when lifting the package filled with full containers such as bottles. In particular when choosing bottles with a crown cap or such sealing it has, surprisingly, appeared that it is precisely there that additional protection is required while the demands as to the strength of the material used for the  
20 package can be considerably reduced. For instance, thinner, lighter material can be used than is customary for a similar package.

Preferably, at the location of at least a middle part of the fold lines, viewed in a longitudinal direction of the package, a double layer of material is provided. Herein, double is understood to mean at least a joint thickness which  
25 is greater than the thickness of the material used for the package.

One of these layers can be provided, for instance, by inserting a strip of material but it is preferred that both layers are provided from the at least one blank from which the package is folded. To that end, a package according to the invention is preferably characterized by the features of claim 2.

In such a package, two support flaps are provided, on the free sides of two upper flaps. These support flaps are arranged above and below, respectively, the respective opposite side panels, at least extend below or above, respectively, the fold lines, so that when folding the package from the blank, the desired doubling of material, at least, increase of material thickness is obtained in one go. At least the support flap located on the outside is then fastened against the adjoining side panel, preferably by gluing. Preferably, the support flaps are connected to the respective upper surfaces via fourth and fifth fold lines, while, with the package in set-up condition, these fold lines lie approximately over the second and third fold lines, respectively.

Further, in a package according to the invention, preferably, closing flaps are provided with which the front and rear sides of the package can be closed at least partly but preferably virtually wholly. With this, a package is obtained which protects the containers particularly well, screens them where necessary from (day)light, while a relatively large surface is obtained on the outside on which printings such as advertisements can be provided while, as a result, the bearing capacity and form-retaining capacity of the package can be further improved. It is particularly advantageous when, on both sides of the bottom, a support closing flap is provided which is folded upwards as far as adjacent or against the containers, against which the closing flaps are or can be folded, on its outside or, optionally, between the containers and said support closing surface. In an alternative manner of folding, the closing flaps for that matter can also be folded between the respective side panels and the containers, while the support closing flaps extend approximately at right angles to the bottom panel, along the containers.

Preferably, the closing flaps are connected on both sides of the package via corner flaps to the relevant support closing flaps. Consequently, a blank is obtained which can be handled more easily. The fact is that the flaps will move less easily relative to each other and to the further parts of the blank. Moreover, with this, setting up the package is simplified in that when

folding the closing flaps, the support closing flaps move along or vice versa. Furthermore, thus, the corners of the package are further reinforced.

Preferably, the closing flaps and corner flaps and/or the corner flaps and the support closing flaps are mutually connected when setting of the package, for instance by gluing. As a result, an even more solid package is obtained while, furthermore, the closing flaps and/or the support closing flaps are prevented from springing back.

In a further advantageous embodiment, on both sides of the upper side of the package, an upper closing flap is provided, with which a part of each of the ends of the package can be closed. These upper closing flaps can, for instance, be glued or fastened in a different manner to the closing flaps or other glue flaps connected to the side panels.

In a particularly advantageous embodiment, in or adjacent the upper side of the package, in the first upper flap, tear lines are provided extending from adjacent these openings in the upper flap in a direction of an adjoining longitudinal edge of the upper flap. As a result, simply and rapidly, a part of the upper side and, optionally, a side of the package can be opened for taking out the containers. If the ends are at least partly closed by the earlier described closing flaps and/or support closing flaps, the shape of the package remains substantially intact after breaking the tear lines and the containers, for example when empty, can be placed back to be discharged.

With a package according to the invention, in particular with the above described tear lines, preferably, the second upper surface is designed such that the second upper surface does substantially not extend above or below a tear tab which is formed by a part of the upper surface located between the tear lines on one side of an opening. As a result, this tear tab can be torn loose particularly simply while less material is required. By designing the second upper surface such that it extends substantially between these openings and, in an earlier described manner, is located with a support flap beyond the fold line with which the first upper surface is connected to the first

side panel, the desired doubling of material is obtained in a simply manner and, moreover, a doubling of the material between the openings is effected so that the bearing capacity is further increased, without thicker material having to be used.

5           With a package according to the invention, preferably, thin cardboard is used. For a six-pack of glass bottles with a content of approximately 30 – 33 cc, preferably, a cardboard is used, in particular solid cardboard, optionally provided on at least one side with a coating, with a specific weight of less than 380 gr/m<sup>2</sup>. More in particular, according to the  
10 invention, cardboard is used with a specific weight of less than 320 gr/m<sup>2</sup>. It has appeared that for such a package, in particular if provided with the support flaps and/or at least partly closed ends, cardboard can be used with a specific weight of less than 250 gr/m<sup>2</sup>, for instance 225 gr/m<sup>2</sup> or less. Even 180 gr/m<sup>2</sup> is possible.

15           In a manner known per se, a package according to the invention can have an outer form which is adapted to the containers to be packaged therein. For instance, the upper parts of the side panels can slightly incline inwards, such that the bottom panel has a greater width than the upper surface.

          The invention further relates to a blank for a package according to  
20 the invention, characterized by the features of claim 19.

          In a particularly simple manner, such a blank can be manufactured and treated, for instance printed, stored, transported and processed to form a package according to the invention. As it is not pre-glued, this blank can be stored and transported and forming the package can be carried out on an  
25 apparatus while confining the desired number of containers.

          The invention further relates to an apparatus for setting up packages according to the invention from a blank according to the invention. According to the invention, such an apparatus is characterized by the features of claim 24.

In the further subclaims, further advantageous embodiments of a package and blank according to the invention are described. In the drawing:

Fig. 1 shows a blank for a package according to the invention, in a first embodiment;

5 Fig. 2 shows a blank for a package according to the invention in a second embodiment;

Fig. 3 shows a blank for a package according to the invention in a third embodiment;

10 Fig. 4 shows a blank for a package according to the invention in a fourth embodiment;

Fig. 5 shows a package according to the invention, set-up from a blank according to the invention, in particular according to Fig. 1;

Fig. 6 shows a package according to the invention, with broken away parts;

15 Fig. 7 shows a package according to the invention in an alternative embodiment, for instance set-up from a blank according to Fig. 3;

Fig. 8 shows a package according to the invention, in a further alternative embodiment, for instance set-up from a blank according to Fig. 4;

20 Fig. 9 shows, in cross section along the plane IX-IX in Fig. 5, a package with bottles;

Fig. 10 shows a cross section comparable to that as shown in Fig. 9, in an alternative embodiment;

Fig. 11 schematically shows the position of the tops of two bottles in a package according to the invention, in a position of rest;

25 Fig. 12 shows a package according to Fig. 11, schematically in deformed condition when lifted, while, in interrupted lines, the original position of the caps is shown;

Fig. 13 schematically shows an apparatus for setting up a package according to the invention, in a first embodiment;

Fig. 14 shows an apparatus according to Fig. 13, in an alternative embodiment; and

Fig. 15 shows a blank, comparable to Fig. 1, with a number of alternatives which can also be used with other blanks.

5 In this description, identical or corresponding parts have identical or corresponding reference numerals. The blanks as shown in Figs. 1 – 4 are all suitable and intended for forming six-packs for six (glass) bottles with a content of approximately 0.3 – 0.33 liter of beer, soft drink or the like. In the embodiment shown, these blanks are manufactured from cardboard, in  
10 particular solid cardboard, preferably provided with a coating on at least one side. For a six-pack as described, this cardboard preferably has a specific weight of less than 380 gr/m<sup>2</sup>, more in particular less than 320 gr/m<sup>2</sup> and preferably less than 280 gr/m<sup>2</sup>. In particularly advantageous embodiments, for instance according to Fig. 5, 7, 8, 9 and 10, for such a six-pack, even cardboard  
15 can be used with a specific weight of less than 250 gr/m<sup>2</sup>, in particular less than 225 gr/m<sup>2</sup>. Optionally, even cardboard can be used of less than 200 gr/m<sup>2</sup>, for instance approximately 180 gr/m<sup>2</sup> or less. It will be clear that comparable blanks can be manufactured in a comparable manner for packaging different containers such as cans, bottles and the like, for instance a four-pack, eight-  
20 pack, twelve-pack or twenty-four pack.

In Figs. 1 – 4, four blanks are shown for packages according to the invention. When describing Figs. 2 – 4, substantially, only the differences with the embodiments according to Fig. 1 will be further elucidated.

25 In Fig. 1, a blank 1 according to the invention is shown, comprising a bottom panel 2. On a first side thereof, via a first fold line 3, a first side panel 4 is connected thereto, while on the opposite side, via a first fold line 3, a second side panel 5 is connected thereto. Via a second fold line 6, the first side panel 4 is connected to a first upper flap 7, via a third fold line 8, the second side panel 5 is connected to a second upper flap 9. Via a fourth fold line 10, the first



upper flap 7 is connected to a first support flap 11, via a fifth fold line 12, the second upper flap 9 is connected to a second support flap 13.

Via a sixth folding line 14, each side panel 4, 5 is connected to a closing flap 15, built up from a bottom closing flap 15A and a top closing  
5 flap 15B, for reasons to be mentioned further. Each bottom closing flap part 15A is connected, via the sixth fold line 14 to the side panel 4, which part of the sixth fold line 14, preferably, extends approximately at right angles to the first fold line 3. Via two seventh fold lines 16, which extend approximately at right angles to the first fold lines 3, the bottom panel 2 is connected to a  
10 substantially trapezoid-shaped support closing flap 17. On both sides of each support closing flap 17, via a ninth fold line 19, a corner flap 18 is connected to the adjoining bottom closing flap 15A and, via a tenth fold line 20, to the respective support closing flap 17. The ninth fold line 19 is approximately in alignment with the first fold line 3, the tenth fold line 20 includes an angle  $\alpha$   
15 therewith which deviates from  $90^\circ$  and, in the exemplary embodiment shown, is approximately  $45^\circ$ . Adjacent each corner 21 of the bottom panel 2, between the ninth fold line 19, the tenth fold line 20 and the corner flap 18, a recess 22 is provided which simplifies folding.

Between each bottom closing flap 15A and top closing flap 15B, a  
20 recess 23 is provided, bounded by a folding element 24 which is connected via two short eleventh fold lines 25 to the bottom closing flap 15A and the top closing flap 15B. Via an eighth fold line 26, each side panel 4, 5 is divided into a lower side panel 27 and an upper side panel 28, each upper side panel 28 being somewhat trapezoid-shaped, such that the eighth fold line 26 is longer  
25 than the second and third fold line 6, 8, respectively, and is bounded on both sides by an upper part of the sixth fold line 14.

In the exemplary embodiment shown, via a twelfth fold line 29, the first upper flap 7 is connected on two opposite sides to a somewhat trapezoid-shaped upper sidewall flap 30 which on the side remote from the twelfth fold  
30 line 29, is provided with a glue flap 31. The length between the twelfth fold

line 29 and the adjoining glue flap 31 is preferably approximately equal to the length of the upper part of the sixth fold line 14 above the eighth fold line 26. In the upper flap 7, two openings 32 are provided. Through these openings 32, for instance two fingers, in particular a thumb and a finger can be inserted  
5 below the upper flap 7. The openings 32 can be punched out, but can also be covered by lips which, for instance, on the sides 33 facing each other, can be connected via fold lines to the upper flap. From each opening 32, two tear lines 34 extend into or adjacent a corner 35 of the upper flap 7, so that between the tear lines 34 and the opening 32 a tear tab 36 is formed. The purpose  
10 hereof will be explained further.

In Fig. 2, a comparable blank is shown, wherein identical parts have identical reference numerals. However, in this embodiment the first support flap 11 has been omitted.

In Fig. 3, a second alternative embodiment of a blank 1 according to  
15 the invention is shown, wherein, again, identical parts have identical reference numerals. In this embodiment, on one side, on the right-hand side in Fig. 3, the upper closing flaps 15B are lengthened relative to the embodiments according to Figs. 1 and 2, while the upper shoulder flaps 30 have been omitted. Here, the respective upper closing flaps 15B are provided with glue  
20 flaps 31A, which, with the package set up, can be glued against the first upper flap 7. On the opposite side, the upper closing flaps 15B are also somewhat lengthened, so that with the package set up as shown, for instance, in Fig. 7, a closed side can be obtained. In this embodiment the two support flaps 11, 13 have been omitted.

25 Further, in Figure 4, an alternative embodiment is shown of a blank 1 according to the invention, wherein, again, identical parts have identical reference numerals. In this embodiment too, the support flaps 11, 13, have been omitted. Here, in each upper side panel 28, contiguous to the second and third fold line 6, 8, respectively, adjacent its centre, a cut 37 is provided,  
30 approximately at right angles to said second or third fold line 6, 8, respectively.

This cut extends over a part of the height of the respective upper side panel 28. On both sides of this cut 37, which, for that matter, can also be provided as a perforation that can relatively simply be broken, a folding flap 38 is provided, connected to the upper side panel 28 via a fold line 39 which includes an angle  
5 with the cut 37. Consequently, the folding flap 38 is, for instance, somewhat triangular. Along the respective second and third fold lines 6, 8, respectively, the folding flap 38 has been cut loose or provided with a perforation, so that the folding flap can be pressed outwards relatively simply along the fold line 39. The purpose hereof will be discussed further.

10 In this embodiment, in each upper sidewall flap 30, two tear lines 40 are provided, reaching from the corner 35 to the opposite longitudinal edge 41, optionally bridging a glue flap 31. Thus, a lengthening of the tear tab 36 is obtained on this upper sidewall flap 30. With each of the blanks 1 shown in Figs. 1 – 4, the second upper flap 9 is designed such that, with the package set-  
15 up, it can be folded under or over the first upper flap 7, between the openings 32. To that end, the second upper flap 9 is provided with a shoulder 42 adjoining the third fold line 8, which shoulder tapers in the direction of a bridge part 43 with a width which approximately corresponds, or is smaller than the distance between the openings 32 in the first upper flap 7  
20 and an end part 44, adjoining the bridge part 43 on one side and, optionally, the second support flap 30. Then, in general sense, it is intended that the second upper flap 9 is designed such that it is not located below the tear tabs 36 and/or the openings 32 so that the tear lines 34 can be broken in simple manner and the tear tabs 36 can be torn away easily. The second upper  
25 flap 9, in particular the bridge part 43, and optionally the support flaps 11 and/or 13 then offer the advantage that a greater bearing capacity is obtained without, thus, reducing the ease of use, while the blanks 1 according to the invention can simply be punched from cardboard, be cut or the like, while a similar number of blanks customary for closed six-packs can be punched from  
30 one sheet.

In Fig. 15, a blank 1 is shown, comparable to the one shown in Fig. 1, while, however, a number of alternatives or additional solutions are shown, which separately or together can be used with all embodiments shown. Again, herein, only the parts which deviate from the above-mentioned are  
5 discussed.

In the blank 1 according to Fig. 15, via an upper flap fold line 70, the second upper flap 9 is connected on both sides to a reinforcement flap 71, which, when setting up to a package from this blank 1, can be folded under the second upper flap 9, one over the other, so that two additional layers are  
10 obtained below this upper flap 9. With this, the bearing capacity is considerably increased and, optionally, the blank can be manufactured from even thinner cardboard.

Further, in Fig. 15, as alternative, a glue strip 72 is shown, bridging at least the third fold line 8 and the fifth fold line 12 and the second upper  
15 flap 9 located therebetween. The glue strip 72 is manufactured from, for instance, paper or, preferably, plastic and leads to a greater bearing capacity and, hence, to the possibility for thinner cardboard.

In the bottom 4, by way of example, four openings 73A, 73B are shown through which pillars of a pillar crate can reach. Here, the two middle  
20 openings 73 have a substantially square shape with sides 74 convex towards each other, while the two outer openings 73B. are substantially triangular with, on the sides facing the other openings 73, two convex longitudinal edges 74. Longitudinal edges 74 of two adjoining pillars, at least openings  
25 through which they can reach, describe, each time, an imaginary circle K in the form of a container such as a bottle. As a result, a package according to the invention can simply be used in a known pillar crate. Preferably, then, a pillar crate is used in which at least a number of pillars is designed with a cross-section similar to the one of the openings 73 B, optionally with the flat  
30 sides 74A facing each other, while confining a slit located therebetween, in which, during use, two adjoining longitudinal walls 17, 15A can be included.

With such a crate, multipacks for different numbers of containers can be used in the same pillar crate. Preferably, all pillars are designed in this manner or preferably, provided with two earlier describes slits extending at right angles to each other. Also, the pillars can be designed to be low such that a package  
5 according to the invention can be placed on them within a crate.

In the exemplary embodiments shown, each time, the bottom panel 2 is closed, i.e. not built up from two or more panels. In each blank shown, one or both support flaps 11, 13 can be provided or be omitted. Optionally, the second upper flap 9 can be approximately similar to the first  
10 upper flap 7, for instance if both flaps are provided with perforations or the package can be opened in a different manner, for instance on a side or an end face.

As appears from, for instance, Fig. 15, optionally, openings can be provided in the bottom 4, for instance, for positioning a crate or the like.

15 Fig. 5 shows a package 50 set up from a blank 1 according to the invention, in particular according to Fig. 1. This package, which is arranged on the closed bottom panel 2, is shown in perspective view with the first side panel 4 and one end 51 facing forward. It is clear that a package 50 has a substantially block-shaped lower part 52 and a somewhat tapering,  
20 frustoconical upper part 53, whose sides are formed by, on the one side, the upper side panels 28 and, on the other side, the upper shoulder flaps 30, while the upper surface is formed by the first upper flap 7 below which, indicated in interrupted lines, the second upper flap 9 is shown, with, located on the inside against the first side panel 4, in particular the upper side panel 28 thereof, a  
25 second support flap 13. On the opposite side, on the outside, the first support flap 11 has been fastened, in particular glued, against the other upper side panel 28 of the second side panel 5.

In this embodiment, the side panels 4, 5 are folded through an angle of 90° relative to the bottom panel 2 after a number of bottles 54, in the  
30 exemplary embodiment shown six, represented in broken lines in Fig. 6, have

been arranged on the bottom panel 2 in two rows of three. The support closing flaps 17 are folded upwards along the seventh fold lines 90 while taking along the corner flaps 18, which are bounded by the fold lines 19 and (indicated in interrupted lines) 20. As a result of this folding movement, the closing flaps 15, in particular the bottom flaps 15A thereof, are pulled along while confining the corner flaps 18 between the bottom closing flaps 15A and the support closing flap 17. As shown in Fig. 5, the closing flaps 15A slightly overlap by an edge 60 so that they abut against each other. Optionally, they can be glued. It is preferred, then, that between the closing flaps 15 and the corner flaps 18 and/or between the corner flaps 18 and the support closing flaps 17 also a connection is formed by, for instance, glue or the like.

The upper side panels 28 are slightly folded inwards, while the upper closing flap parts 15B are folded around a sixth fold line 14 to which position they are slightly pulled along by the closing elements 24. In this embodiment, the second upper flap 9 is folded downwards along the third fold line 8, while, as indicated, the second support flap 13 is folded against the inside of the first side panel 4. This can be glued, but this is not required. Thereupon, the first upper flap 7 is folded over the second upper flap 9, while, as indicated, the first support flap 11 is fastened, in particular glued, against the second side panel 5, in particular the upper side panel 28 thereof.

The upper shoulder flaps 30 are then folded downwards along the twelfth fold lines 29, against the upper parts 15B of the closing flaps 15, while the glue flap 32 is fastened, in particular glued, against the bottom closing flap parts 15A. With this, a completely closed package is obtained with a great bearing capacity, folded from relatively light cardboard.

As appears from Figure 5, the ninth fold lines 19 extend approximately parallel to the longitudinal edge of the bottom panel 2, so that completely closed ends 51 are obtained, which form a large and attractive surface for, for instance, advertisement printing or the like. A closed package

offers the advantage that the bottles 54 are well confined and, for instance, are screened-off from daylight.

A package 50 according to the invention as shown in Fig. 5 can, for instance, be opened by inserting a finger into an opening 32 and then tearing the tear tab 36 loose along the tear lines 34 and then from the package 50. 5 Optionally, the glue flap 32 can be connected via a further tear line to the upper side flap 30 so that this can be torn loose a simple manner. In Fig. 6, a package according to Fig. 5 is shown, wherein the tear tab 36 together with the adjoining upper sidewall flap 30 has been torn away, on both sides of the upper 10 flap 7. The bottles 54 which can simply be taken from the thus formed opening 55 are clearly visible. It is clear that a part of the first upper flap 7 has remained behind, as well as the second upper flap 9, of which in particular the bridge part 43 is visible as a second layer below the first upper flap 7. As a result of the second flap 9 and, in particular, the second support flap 13 as well 15 as the first support flap 11, on both sides adjacent a middle part of the respective second and third fold line 6, 8, a doubling of material is obtained, there where, when engaging the package 50, the top ends, in particular the caps 56 of the bottles 54 will press against the fold lines 6, 8 as schematically indicated in Figures 11 and 12.

20 Figure 11 shows an upper part of a package for containers such as bottles, for instance according to the invention, wherein schematically, the top ends of second bottles 54 with caps 56, for instance crown caps are shown. In Fig. 11, the condition of rest is represented wherein an upper flap 7, 9 rests on the crown caps 56, while the upper side panels 28 extend on both sides thereof 25 in an inclining manner along the caps 56. If, as shown in Fig. 12, a finger 57 is inserted through each of the openings 32, and if the package is lifted by said upper flaps 7, 9 then, the upper side panels 28 are slightly pulled inwards. Surprisingly, it has appeared that this is one of the weak parts in known multi-pack packages. By, according to the invention, obtaining at that location 30 an increase of material thickness, in particular by lying at least two layers of

material one over the other, it has appeared that with relatively thin, less heavy cardboard, at least sheet material, a package can be obtained which, nevertheless, can be lifted in the manner mentioned.

5 In Fig. 9, a cross section is shown of the package according to Fig. 5, while clearly the two layers of material lying on top of each other of the first and second upper flaps 7, 9 and the upper side panels 28 with first and second support flap 11, 13, respectively, are shown. It is clear that the bottles 54 are well confined.

10 In Fig. 10, an alternative embodiment is shown, comparable in cross section to the one shown in Fig. 9, while the support flaps 11 and 13 have been omitted, while at least adjacent a middle part of the second or third fold line 6, 8, respectively, on the side thereof facing inwards, a loose strip 58 is provided such that the desired thickening of material is obtained, at least tearing of the respective fold lines 6, 8 can be prevented. These strips 58 can, 15 for instance, be loosely arranged against the inside or be glued against the blank or be fastened in a different manner, but can also be provided as a continuous strip on the inside of the blank or over the caps 56 of the respective bottles 54. These strips 58 can, for instance, be manufactured from the same cardboard, but can also be formed from a different material, for instance 20 plastic. Such a thickening of material for that matter can also be used in existing, comparable packages as described in the introduction.

A package as shown, in particular in Fig. 6, offers the advantage that also in opened condition, its shape is substantially maintained, as is the bearing capacity, which remains virtually identical. The containers, such as 25 bottles 54, after having been emptied, can for instance be placed back into the package 50 through the openings 55 and be returned therein to, for instance, the shop. With known packages of a comparable nature, this is not possible.

30 In Fig. 7, a package 50 according to the invention is shown, folded from a blank 1 according to Fig. 3. In this embodiment, the upper closing flap parts 15B are slightly folded over each other and glued together by the



edge 60. The glue edges 31A have been glued against the underside of the first upper flap 7, below the tear tabs 36. It is preferred that the upper parts of the sixth fold lines 14 are designed as tear lines, so that the upper sidewall flaps 15B can simply be torn away by the tear tab 36, for forming the opening 55 shown in Fig. 6. Preferably, in this embodiment, the strips 58 are provided as described with reference to Fig. 10. However, naturally, also a first and/or second support flap 11, 13 can then be provided instead of or in addition to the strips 58.

In Fig. 8, a further alternative embodiment of a package 50 according to the invention is shown, at least the upper part thereof. It has been folded from a blank as shown in Fig. 4. It is clear that due to the folding flaps 38 and the cut 37, an opening 61 has been created in the central area of the second and third fold line 6, 8 so that, therein, the cap 56 of the bottles 54 located in the middle of the two rows can move somewhat, without undesired tensions arising in the material. In this manner too, the tear lines are also prevented from tearing in, whereby the bearing capacity would be reduced in an unacceptable manner.

In the embodiment shown in Fig. 8, the tear tab 36 extends over the upper shoulder flaps 30, between the tear lines 40. With this, too, an easy to open package 50 is obtained which, moreover, can be used as shown in Fig. 6, as well as the embodiment shown in Fig. 7, for returning empty containers 54.

It will be clear that the embodiments of the blanks 1 according to Figs. 1 – 4 and the packages 50 according to Figs. 5 – 10 are only examples and that combinations of parts thereof for alternative embodiments are possible. These are expressly understood to fall within the framework of the invention as outlined by the claims.

Fig. 13 schematically shows an apparatus 100 according to the invention, for setting up packages 50 according to the invention in a continuous line, without the package needing to be rotated. In this embodiment, the blanks 1 are supplied in planar condition and, with the aid of

rotating suction cups 101, placed on a conveyor path 102, whereupon, with means known per se, from two sides, bottles 54 are arranged in two rows on the bottom panel 2, as shown, for instance, in position 103. Then, at position 104, with folding means, the side panels 4, 5 are folded upwards  
5 against the side of the bottles 54, whereupon, in position 105, the two upper flaps are folded one over the other. With the aid of press-on means 106, the first upper flap 7 is pressed on a pre-glued second upper flap 9. Then, the closing flaps and/or the corner flaps and/or the support closing flap are pre-glued and pressed to the closed position, whereupon in position 107, during  
10 feed-through in the direction P of the packages 50, a hood 108 is pressed on the top side of the packages. The hood 108 is hollow at the underside with a shape corresponding to the upper part 53 of the package 50, contiguous to its upper flaps 7, 9. Thus, when pressing this hood 108 down, the upper shoulder flaps 30 are pressed downward and held in pressed-on condition for gluing  
15 them, after, with the aid of gluing means 109, the upper closing flap parts 15B as well as, if desired, the glue flaps 31, have been pre-glued. In the apparatus 100, a series of such hoods 108 with press-on means 109 is provided, which with the aid of driving means 110 can move along in the direction P, so that during transport of the packages 50 the desired press-on force can be  
20 maintained with the hoods 108 and press-on means 109.

As a result of the configuration of, on the one side, the blank 1 and, on the other side, the apparatus 100, the apparatus 100 can be designed to be relatively short, while the packages can be set up and closed in a continuous line without being rotated about a vertical axis.

25 In Fig. 14, an alternative embodiment of an apparatus 100 according to the invention is shown, distinguished from the first embodiment according to Fig. 13 in that in this embodiment the closing flaps 15 are closed with the aid of a rotating arm 112 before the upper flaps 7, 9 are pressed over it for closure thereof. As is the case with the embodiment according to Fig. 14, the  
30 closing flaps are folded inwards with the aid of U-shaped brackets 111 which

are pressed from two opposite sides against the packages 50 and held in a pressed-on condition during transport in the direction P. In this embodiment, the upper flaps 7, 9 are pressed onto each other after they have been pre-glued, with the aid of a continuous belt 113. For this embodiment too it holds that the apparatus can be designed to be relatively short and can form, close and discharge packages at a high speed in a continuous line, without the packages 50 needing to be rotated about a vertical axis or needing to be displaced in vertical direction.

The invention is not limited in any manner to the exemplary embodiments represented in the description and the drawings. Many variations thereon are possible within the framework of the invention as outlined by the claims.

For instance, blanks and packages according to the invention can be adapted in a simple manner for different numbers of containers or other types of containers, for instance cans, and any combination can be made of different embodiments of panels, flaps, fold lines and the like as shown in the Figures and described in the description.

Naturally, a blank 1 according to the invention can also be formed from a different material, for instance plastic, and have a different weight, depending on the desired bearing capacity. A strip 58 can extend over the full length of the blank and for instance be glued, so that always the desired thickening of material is obtained, both between the openings and at the location of the center of the second and third fold lines.